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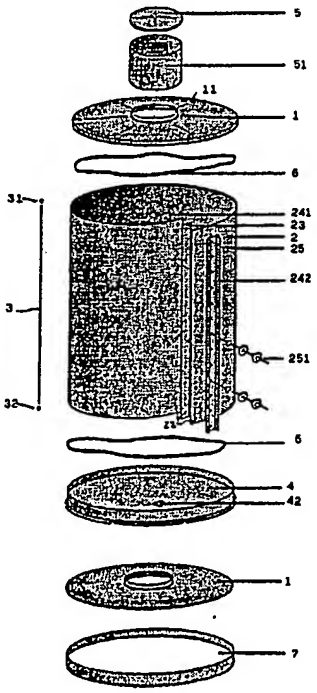
(54) Title: MODULAR CYLINDRIC CONTAINER

(57) Abstract

A cylindric container composed of some modular elements, characterized in that these consist in: a flexible sheet of a form substantially rectangular (2) that has the perimetrical dimensions of the lateral surface of the cylindric container that we must make, having two opposite joining edges, corresponding substantially with the height of the perimetrical surface of the cylinder and their distance apart is substantially equal to the length of the development of the base cylinder of the container that we must realize; a sealing means to tightly join the said two opposite edges (23, 24) to provide said sheet (2) with a substantially cylindric conformation to form the mantle of the container; two opposite closure means to close the said cylinder as a cover (1) and base constituting the bottom of the container (4).



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DESCRIPTION

MODULAR CYLINDRIC CONTAINER

Technical Field

My invention relates to a modular cylindric container.

The invention is applicable for containers of big dimensions that are to contain liquids (small and large tanks); it is not excluded however, that they can be used for different purposes and in different sizes.

Background Art

In prior art are known different kinds of modular containers with the evident scope to reduce storage space and encumbers when they are not in use or in transport.

These known solutions present a general difficulty of sealing after the assembly of the components elements and are however complex and expensive.

Scope of the present invention is to obviate to the above mentioned drawbacks.

Disclosure of Invention

This and other scopes are reached with this invention as claimed, by means of a cylindric container composed of modular elements, characterized by the fact that it consist in:

- a flexible sheet with a substantially rectangular form that has the same perimetrical dimensions of the lateral surface of the cylindric container that we must make, having two opposite joining edges corresponding substantially in height to the perimetrical surface of the cylinder and their distance apart is substantially equal to the length of the development of the base cylinder of

the container that we must realize;

- means to join together said two opposite edges to provide the said sheet with a substantially cylindric conformation;

- two opposite closure means to close the said cylinder which serve as a cover and base.

With this solution one realizes a cylindric container that can be supplied in disassembled elements, easily transportable with little encumber, being able to carry out the assembly with sealing means and corresponding clamping means, not to exclude the glueing solution, making possible the realization of a cylindric container with disassembled elements of strongly reduced encumber that can be easily handled.

Advantageously for reinforcement or disassemble functions some tensors as tie rods are provided to clamp by tightening said closure means that are duly endowed with flanging holes to be clamped in a opposite by said tensors.

With this solution one improves the system of clamping and tightening, and one strengthens the structural system of the obtained container (for example large or small cylindric tanks).

Advantageously to reinforce the lateral surface (mantle) we can provide some external rings or spiral reinforcement that consent the mantle to maintain the circular form and strengthen the perimetrical surface against the hydrostatic push-force of the contents also utilizing sheets with a reduced thickness in order to have the requested elastical flexibility from the flat sheet form to the curved sheet cylinder form .

Also, advantageously both the cover and the bottom have a flange orientated annular conformation towards the mantle for upper and lower overlapping on the cylindric conformation already prearranged of the sheet constituting the same mantle.

Advantageously said modular cylindric container is characterized in that:

- the said rectangular sheet is a flat sheet without angle implications at the respective joint edges in the cylindric containing form;
- said edges are holed;
- the respective connection in the cylindric form is made by a sealing together the said edges and by means of bolts with the help of the profile which has the corresponding holes respectively at the interior and exterior.

With this solution we have the advantage to have completely flat sheets with a minor encumber and a minor working cost.

The watertightness is assured by the intermediate sealing and the mechanical tightness is assured by the friction force between the contact surfaces in the clamping of the bolts.

In order to assure a minor external tension force of assembled cylindric containers, the sheets are already made slightly curved.

In this way if one increases the encumber of the same for the respective camber of the curving, we obtain the advantage of reducing the stress in making the cylindric form and doing this without having any problem to pile them, inasmuch that the sheets even if slightly curved can equally be stacked.

In such a way we obtain the advantage of furthermore structuring in a optimally way the reinforced ensemble of the obtained container, assuring it furthermore the sealing of the respective joints.

These and other advantages will appear in the specified successive preferential solution description of realization with the help of the enclosed drawings of which execution details are not to be considered limitative but only for exemplification.

Figure 1 represents a perspective schematic view of a mounted cylindric container;

The Figures from 2 to 5 represent the disassembled elements that form the container.

Figure 1A is an enlarged view of the container according to this present model.

Figure 2A represents in perspective view the packing method of the sheets that will realize the covering of the container.

Making reference to the Figures it is disclosed that the container includes:

- a flexible sheet of a substantially rectangular form (2) of the perimetrical dimensions of the lateral surface of the cylindric container that we must make, having two opposite angled edges (21), corresponding substantially with the height of the perimetrical surface of the cylinder and their distance apart is equal substantially to the length of the development of the base cylinder of the container that we must realize;
- sealing means (23 24) to join said two opposite edges to provide the said sheet substantially with a cylindric conformation;
- two closure means substantially with a disc-like shape (1,4) to supply the said cylinder a base (4) and a cover (1) endowed with a holed flange (41);
- a tie rods ensemble (3,31) to clamp by means of tightening said closure means (14) for the formation of the required cylindric container.

Advantageously the cover can be substantially big and also modular and can have other convenient devices as an overflow, etc. (5).

Also, advantageously said joint means of the edges of the perimetrical sheet can be supplied with seals for tightening (23) and a sheath for clamping (24) with the assistance also of a screw means.

The cover and the basis have also tightening seals (6).

The material conveniently used is a reinforced fiber-glass plastic material that is polyester resin reinforced by fiber glass and the like.

In these forms of exhibit only some of the possible solutions are

represented, in practice these can vary in a ambit much vaster even if not described in the limits of what was previously enunciated and what is hereafter claimed.

Making reference to the Figures 1A and 2A these disclose that:

- the rectangular sheet 2 is flat with holed joint edges;
- for the tight one, use seal 23;
- the clamping is made with bolts 25 by means of interior and external profiles 241,242;
- to the basis we can apply for screwing some discharge openings, 251;
- the cover 1 can be with or without the prominence 5 of the substantially large plug ;
- the perimetrical holes 11 in the cover 1 have been made for the clamping of the same and the bottom 4 with the tie rods 3 31 32;
- both the cover 1 and the bottom 4 are clamped with seal 6;
- the bottom 4 has a hole at the deposit discharge basis for decantation and washing 42.
- the ensemble provides some cylindrical bands for reinforcement 7 that can be inserted both to the basis and to the top.

Claims

1. A Cylindric Container composed of some modular elements, characterized in that these consist in:

- a flexible sheet of a form substantially rectangular (2) that has the perimetrical dimensions of the lateral surface of the cylindric container that we must make, having two opposite joining edges, corresponding substantially with the height of the perimetrical surface of the cylinder and their distance apart is substantially equal to the length of the development of the base cylinder of the container that we must realize;
- a sealing means to tightly join the said two opposite edges (23 24) to provide said sheet (2) with a substantially cylindric conformation to form the mantle of the container;
- two opposite closure means to close the said cylinder as a cover (1) and base constituting the bottom of the container (4).

2. A container according to claim 1, characterized in that it has furthermore a tie rods ensemble (3 31) to clamp longitudinally and peripherically, by means of tightening said closure means (1,4), being these last endowed with a protruding flanging (11 41) for the insertion and tightening of said tie rods (3 31).

3. A container according to claim 1, characterized in that it has furthermore an ensemble of sealing rings to clamp annularly and peripherically the said sheet after it is cylindrically conformed as mantle of the container (2).

4. A container according to claim 1, characterized in that it has furthermore some spiral reinforcements to clamp annularly and

peripherically the said sheet after it is cylindrically conformed as mantle of the container (2).

5. A container according to claim 1, characterized in that the means to join tightly said two opposite edges (23 24) of the said sheet (2) in a cylindric conformation, consist substantially in a tightening means with a sealing means and clamping means for screwing.

6. A container according to claim 1, characterized in that the means to join tightly said two opposite edges (23 24) of the said sheet (2) substantially in a cylindric conformation, consist substantially in a glueing means.

7. A container according to claim 1, characterized in that the means to join tightly the opposite edges of the upper and lower bases of the said sheet (2) substantially cylindrically, conformed on the respective cover (1) and base bottom (4), consist substantially in a glueing means.

8. A container according to claim 1, characterized in that the said cover (1) has an annular flange conformation oriented downwards to overlap on the upper cylindric conformation already prearranged of the said sheet (2).

9. A container according to claim 1, characterized in that said base (4) has an annular flange conformation oriented upwards to overlap on the basis of the cylindric conformation already prearranged of the said sheet (2).

10. A container according to claim 1, characterized in that the said

sheet is made in a plastic material.

11. A container according to claim 1, characterized in that the said sheet is made in a reinforced plastic material.

12. A container according to claim 1, characterized in that the said sheet is made in a plastic material reinforced by fiber glass .

13. A container according to claim 1, characterized in that the said sheet is made in polyester resin reinforced by fiber glass .

14. A container according to claim 1, characterized in that the bottom and said cover are made in plastic material.

15. A container according to claim 1, characterized in that the bottom and the said cover are made in a reinforced plastic material.

16. A container according to claim 1, characterized in that the bottom and the said cover are made in a plastic material reinforced by fiber glass.

17. A container according to claim 1, characterized in that the bottom and the said cover are made in polyester resin reinforced by fiber glass.

18. A Container as claimed in claim 1, characterized in that:

- the said rectangular sheet (2) is a flat sheet without angle implications at the respective joint edges in the cylindric containing form;
- said edges are holed (22);
- the respective connection in the cylindric form is made by matching and

sealing said holed edges (22) and by means of bolts (23) with the help of the profiles which are holed correspondingly on the respective interior (241) and exterior (242).

19. A container according to claim 1 and 18, characterized in that said sheets (2) have been made slightly curved, with a curvature ray substantially greater than the curvature ray that will form the containing cylinder.

20. A Container according to claim 1 and 18, characterized in that between said holed joint edges (22) a seal is interposed (23).

21. A Container according to claim 1 and 18, characterized in that in said holes (22) is inserted at least one means of screw discharge (251).

22. A Container according to claim 1 and 18, characterized in that said cover (1) has for a substantially large plug (5) one cylindric upwards prolongation element (51).

23. A Container according to claim 1 and 18, characterized in that the said bottom (4) has a discharge hole (42).

24. A Container according to claim 1 and 18, characterized in that it has some cylindrical bands for reinforcement (7).

25. A Container according to claim 1 and 18, characterized in that said holed edges of said flexible sheet (2) is angled (21).

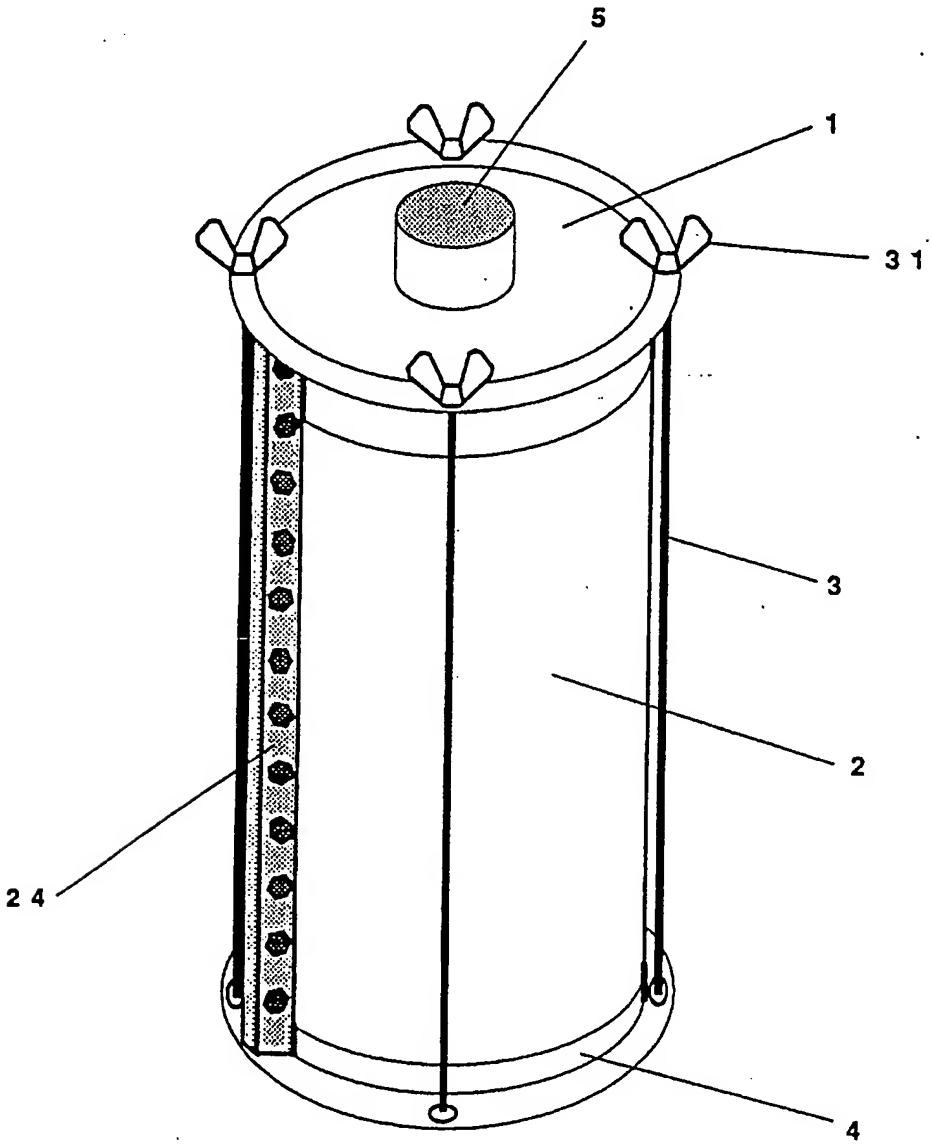

FIG. 1

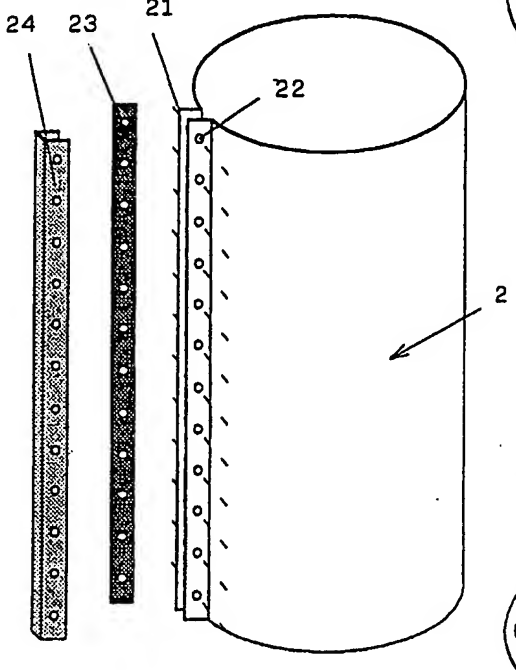

FIG. 2

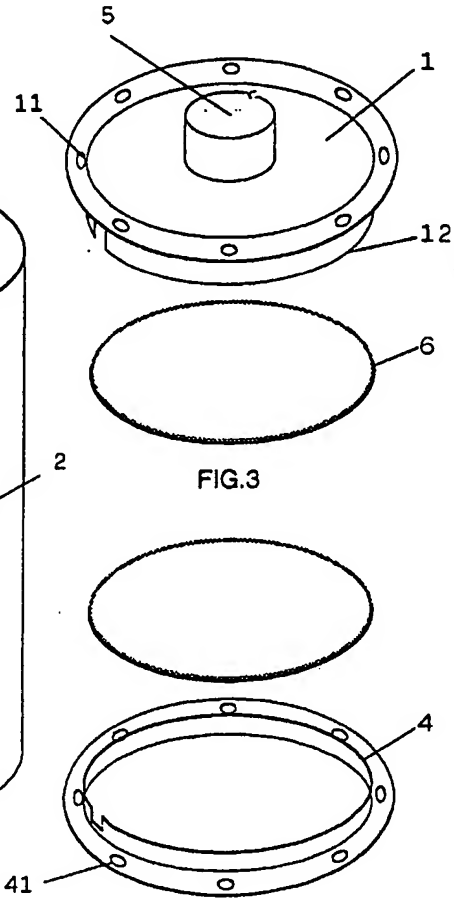

FIG. 4

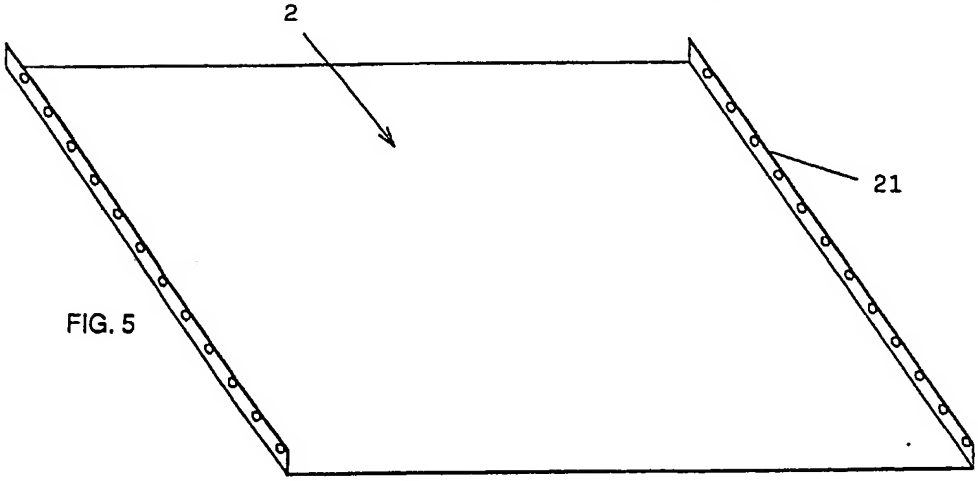

FIG. 5

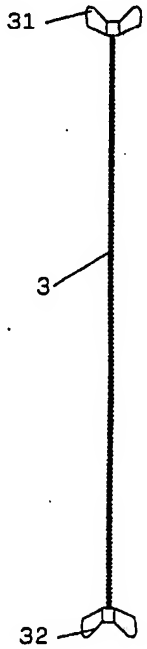

FIG.6

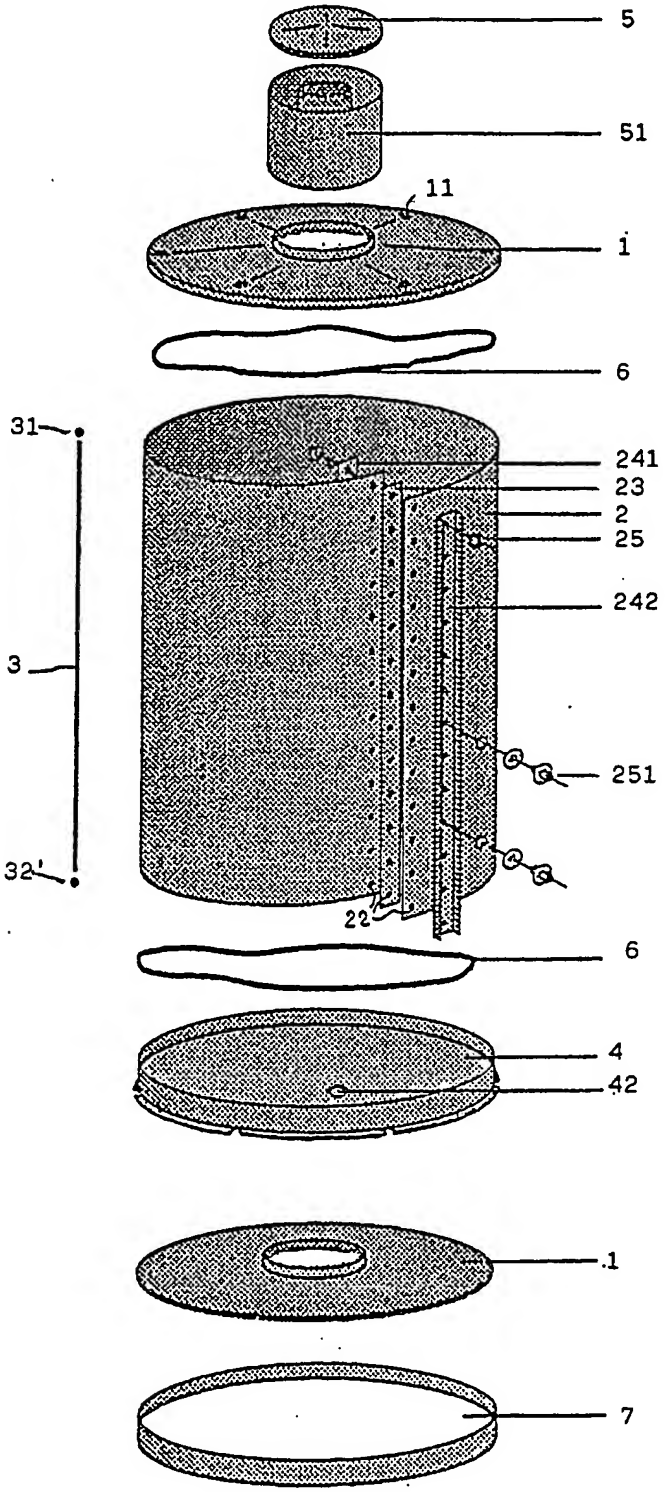

FIG. 1A

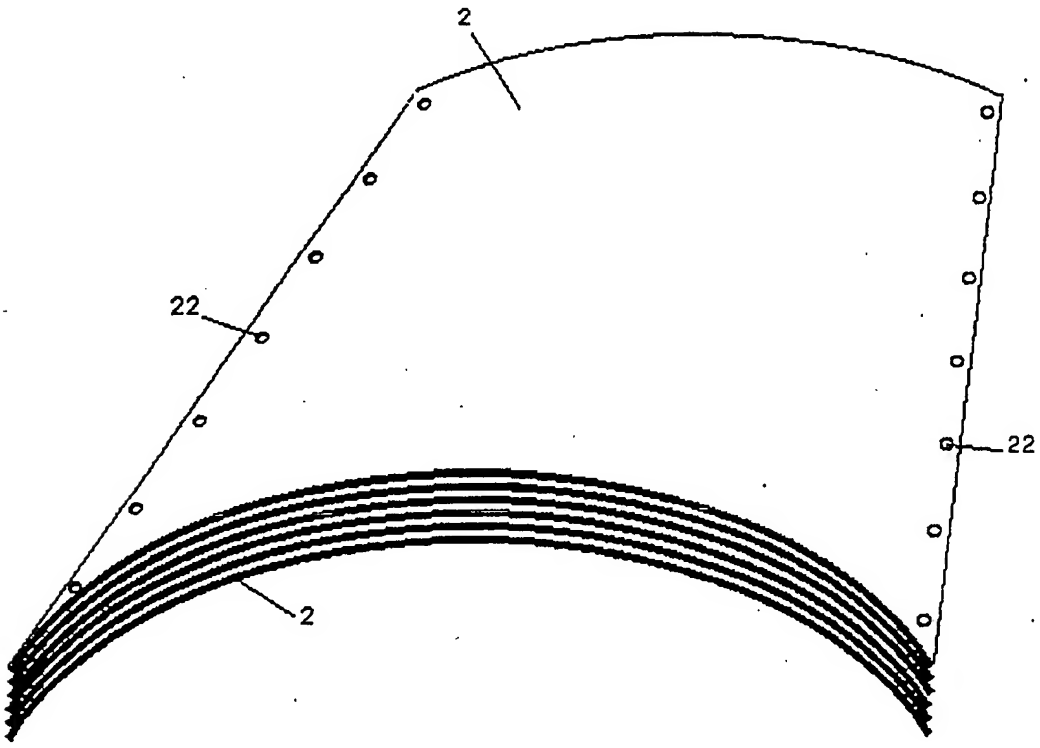

FIG. 2A

INTERNATIONAL SEARCH REPORT

International Application No PCT/EP 92/01305

I. CLASSIFICATION OF SUBJECT MATTER (if several classification symbols apply, indicate all)[6]

According to International Patent Classification (IPC) or to both National Classification and IPC

Int.Cl. 5 B65D90/02; B65D8/04

II. FIELDS SEARCHED

Minimum Documentation Searched[7]

Classification System	Classification Symbols
Int.Cl. 5	B65D

Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched[8]

III. DOCUMENTS CONSIDERED TO BE RELEVANT[9]

Category °	Citation of Document,[11] with indication, where appropriate, of the relevant passages[12]	Relevant to Claim No.[13]
X Y	US,A,1 923 716 (RICHARDSON CO) 22 August 1933 see the whole document	1,8,9 2,5
X	AT,A,312 408 (LJUNGGRENS PAPPERSINDUSTRI AB) 15 November 1973 see page 2, line 33 - line 40	1,10,14
Y	FR,A,1 406 022 (ERHARD JOOS) 16 July 1965 see page 1, right column, line 37 - page 2, left column, line 2; figure 3	2
Y	DE,A,2 624 098 (BRIDGESTONE TIRE CO LTD) 9 December 1976 see page 12, paragraph 3 4 - page 13, paragraph 1; figure 9	5

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IV. CERTIFICATION

Date of the Actual Completion of the International Search	Date of Mailing of this International Search Report
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International Searching Authority	**Signature of Authorized Officer**
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ANNEX TO THE INTERNATIONAL SEARCH REPORT ON INTERNATIONAL PATENT APPLICATION NO. EP 9201305 SA 61900

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Patent document cited in search report	Publication date	Patent family member(s)		Publication date
US-A-1923716		None		
AT-A-312408	15-11-73	None		
FR-A-1406022		None		
DE-A-2624098	09-12-76	AU-A-	1438576	17-08-78
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		GB-A-	1512477	01-06-78
		US-A-	4050605	27-09-77

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